RAB Minutes

NAS North Island

Restoration Advisory Board

Introduction

The forty-sixth Restoration Advisory Board (RAB) meeting for Naval Air Station (NAS) North Island was held on Thursday, May 13, 1998, at the Coronado Public Library from 6:00 p.m. to 8:30 p.m.

Ms. Dorothy Marron, Community Co-Chair, called the meeting to order at 6:00 p.m. and welcomed RAB members and the public, particularly those interested in becoming RAB members.

RAB Attendance: Arno Bernardo, Wayne Crawford, Laura Hunter, Richard Mach, Dottie Marron, Larry McCauley, Marsha Mingay

Public/Navy Attendance: Jerry Bailey, Mark Bonsavage, Paul Brown, Neal Clements, Bill Collins, Peter deFur, Carla Fargo, Cdr. Mike Giorgione, Stephanie Kaupp, Janet Lear, Bob Logan, David DeMars, Mike Magee, Mary Masters, Vivian Mayer, Foster Marshall, Dan McCullar, Tracy Mogg, Amanda Morris, Scott Morris, Tamara Niles, Capt. Dave O'Brien, Rick Phillips, Rey Ringor, Betty Schmucker, Mr. Shaker, Pam Willis, Tom Young.

APPROVAL OF MEETING MINUTES FROM MARCH 13, 1998 AND APRIL 16, 1998 RAB MEETINGS: The March minutes were approved without changes. Ms. Hunter suggested that the name of Ms. Niles' company was incorrect, and that page 4 should refer to counts per minute (CPM) instead of parts per million (PPM). Ms. Hunter also asked that the words "for radiation" be added to the sentence, "Ms. Hunter asked if we have a real background number for North Island." The minutes were approved as amended.

Mr. Bernardo introduced the new Commanding Officer (CO) for NAS North Island, Captain O'Brien, who is replacing Captain Steuer. Captain O'Brien spoke to the RAB and explained that he is the new CO for NAS North Island, Naval Amphibious Base (NAB), San Clemente Island and Imperial Beach (IB). He said he plans to attend future RAB meetings, and hopes to win the next Department of Defense Environmental Award. He also introduced Commander Mike Giorgione, the incoming Staff Civil Public Works Officer, who has taken over Captain Mello's responsibilities. Commander Giorgione said he has spent the past 3 years at Southwest Division, mostly working with the CVN homeporting initiative, and will be at this post for the next two years. He plans to attend the RAB meetings on a regular basis.

<u>REVIEW OF RAB APPLICATIONS/NEW MEMBERSHIP VOTE (Dorothy Marron)</u>

The RAB reviewed the five applications that had been received in the mailer, from LaConta Coleman, Carla Fargo, Ron Hiland, Robert Logan, and Foster Marshall. Ms. Hunter requested clarification on the membership categories listed in the original plan and Ms. Mingay asked for a copy of the RAB Charter. The categories are: (1) neighbors and residents, (2) local businesses, (3) base workers at NAS North Island and retired Navy personnel, (4) public interest groups and planning groups, (5) individuals with technical experience in the environmental and medical fields. Mr. Collins asked if the applicants would identify themselves, and they did so. Ms. Hunter moved that the RAB accept and welcome the new members. The vote was unanimous, and the new members

were invited to sit at the table with the other RAB members. Ms. Marron welcomed the new members and explained that next month's meeting would involve a "paper tour" of NAS North Island and NAB.

TECHNICAL ASSISTANCE FOR PUBLIC PARTICIPATION (TAPP) - Laura Hunter

Ms. Hunter expressed the subcommittee's concern that if they were to rush to get an application in on time, they were not acting responsibly. She explained that the RAB has an excellent consultant on board in Ms. Masters of the Technical Outreach Services to Communities [TOSC], and that should this RAB apply for and receive TAPP funds, Ms. Masters probably would not be able to continue working with us on Site 9. In addition, the subcommittee thought they might be depriving another base, one without such resources, of badly needed funds. Ms. Hunter asked for comments, but there were none.

Ms. Hunter said that the subcommittee is comprised of Laura Hunter, Sandy Kaupp, Dottie Marron and Larry McCauley. Any of the current and new RAB members are welcome to join the subcommittee; in fact the subcommittee could use some help. The subcommittee generally meets once or twice between RAB meetings. Mr. Bernardo recommended that the subcommittee continue meeting so that they would be ready to submit a proposal by October 1st. Ms. Hunter mentioned that the report on the pilot TAPP is due by the middle of June. Mr. Mach asked whether it was possible for the RAB to apply before October for fiscal year 1999 (FY99) funds, and Mr. Bernardo said it was. This RAB will be able to apply in August for fiscal year (FY) 99 funds. Ms. Hunter agreed that the subcommittee would begin work on applying for new funds after they had completed the report on the pilot TAPP.

Mr. McCauley thanked Ms. Marron for the letter she wrote to the Executive Director of the Port of San Diego. Ms. Hunter explained that the Port hosted the teleconferencing between the subcommittee and the various consultants. Mr. McCauley said the letter was passed to the Port Commissioners and that he had received public recognition.

SITE 9 REVIEW

Background: Site 9 was the site of past waste disposal activities. During the 1950's, it was used as an open pit dump for wastes, which would now be considered highly hazardous waste. It was known as the "fiery marsh" since some of the compounds would react and burst into flame. This was typical of the way this sort of waste was handled 50 years ago. There was soil covering part of the site, which is now being remediated. There is a tarp over it. In 1997 a soil vapor extraction system was installed to remove volatile organic compounds (VOCs) from the ground. The NoVOCS system is also being demonstrated to treat contaminated groundwater using shallow and horizontal wells, and is considered to be an innovative technology. Other chemicals on the site will be dealt with in the future.

Human Health and Ecological Risk Assessments - ***Peter L. deFur, Ph.D., an Affiliated Associate Professor at the Center for Environmental Studies at Virginia Commonwealth University***

Dr. deFur most recently reviewed Site 10 for the RAB. He has provided consultation for a number of federal, state and local activities, including cleanup of a contaminated sediment site in Portland, Oregon. He has worked on several other technical assistance grants, including a Superfund site in Pennsylvania, in addition to consulting for citizens' groups and performing federal agency reviews. He is also on the board of directors of a citizen's group and the co-chair of the Science and Environmental Health Network.

Background on Human Health Risk Assessments: Dr. deFur listed the three steps involved in any

risk assessment: (1) effect (also known as hazard assessment); (2) exposure; and (3) dose response. These three are combined into a risk characterization. The exposure levels are measured from samples collected at the site, e.g., in surface soil, groundwater, tissues, etc. The ratio of the estimated exposure divided by the reference dose determines the comparison. Human health risk assessments involve two different risk scenarios for cancer and non-cancer effects. Cancer effects are measured as a chance of increased cancer incidence from an exposure scenario where a one in a million risk is acceptable and a greater risk may require further action. Non-cancer effects are measured as a ratio of potential exposure over a reference dose where, a result greater than 1, may require further action. In this situation, a risk assessment must include evaluation of the methodology used in taking and evaluating samples and the variation from one location to another.

***Cancer Risks*: What is measured is excess cancer risk, i.e. the risk above that where one would normally be expected to get cancer. With cancer-causing chemicals, the assumption is a zero dose causes a zero effect.**

Dr. deFur explained that the cancer risk ratios generally used by the Environmental Protection Agency (EPA), based on what may be acceptable to the population as a cancer risk, are 1 per 10,000, 1 per 100,000 and 1 per million. The national standard for cancer risk is generally 1 per million. Some states use 1 per 100,000, and some Superfund sites are permitted to use 1 per 10,000 as the excess risk level.

Mr. Mogg inquired whether there was a number published by the EPA of a "normal" percentage expected to get cancer. Dr. deFur answered that both the National Cancer Institute (NCI) and the Centers for Disease Control (CDC) maintain a database on the incidence of cancer, and that both publish statistics on the incidence and mortality of cancer. Every state has a cancer registry, often broken down by county. In the U.S., the incidence of cancer is generally 1 in 4.

***Non-cancer Risks*: For non-cancer-causing chemicals, there is a threshold, a low dose at which there is no effect. Whatever the threshold is for no effect, a level of protection is added, adjusting the figure downward to provide a level of safety. Very often the number is 1/10 of the actual level, and this lower number would be the regulatory level.**

Ms. Fargo asked whether all chemicals are lumped together for non-cancer risks. Dr. deFur replied that in the past they've all been done individually, and that it makes sense for chemicals that act in common to be added. However, there is no effective way to add those that don't. He used dioxin as an example, explaining that the name refers to a single compound, but in fact there are 70 different compounds. In response to Ms. Hunter's comment, Dr. deFur explained that the laboratory studies generally refer to single compounds, and that there is very little information on how compounds act in combination. Sometimes the outcome is unpredictable. There could be an additive effect, as with like compounds; the two could offset one another; or the third possibility is that the result is enhanced (synergistic), being greater than simple addition would indicate.

Another unknown factor in risk assessment is how different health effects interact. It was recently discovered that those chemicals which impair the immune system actually increase the potency of carcinogenic compounds. Mr. Mach asked if there was an additive effect between chemicals acting on the same organ or system. Dr. deFur said that there is controversy about this. There is excellent information on the effect of chemicals on human health, but there is very little information available for the effects of non-cancer-causing chemicals on wildlife.

Background on Ecological Risk Assessments: The ecological risk assessment is done by standard formulation. First, there is conceptual modeling, consisting of identification of what takes place, how the ecosystem works and how it is constructed. On Site 9, the area studied was a beach area, meaning that there is limited diversity of plants and animals, that the soil does not have much organic matter,

and there is not much rainfall. In this case, as part of the overall assessment of the ecosystem, important species were identified both on the basis of ecological rarity as well as legal determination. The endangered species list is used to determine which species are assessed, leading to studying the least tern and the burrowing owl on Site 9. However, only adult owls were studied; the eggs were not considered.

The next step in the process is determining the source of the risk. The Navy did a good job of identifying the chemicals, collecting samples, and identifying the exposure pathway. In ecological risk assessments, because cancer risk is not a factor, only an effect ratio is used. A probabilistic risk assessment, which is measured by looking at the chemicals, the concentration, seeing how many of the chemicals have that concentration and then using a range of values for exposure is an alternative method. The ratio effect has been found to be as protective as measures along the lines of probabilistic risk assessment.

<u>NAS North Island Approach and Results</u>: At Site 9, the Navy conducted the two risk assessments (Human health and Ecological) separately. This is standard practice, since the procedures for each are different.

This site, like many others, involved two levels of human health risk assessment: (1) a screening level risk assessment; and (2) a site specific risk assessment, also called a detailed risk assessment. A screening level assessment assumes that the highest concentration is the one to be used, that all exposure occurs throughout the area at all times, and that the most sensitive response is the one that occurs. This is what is used to determine if there is a risk. If little or no risk is found at the highest levels, then it can be assumed that no further study or action is required.

For the ecological risk assessment at the least tern habitat, there is no human habitation. The same is true where the burrowing owls were. There is potential exposure through plants and indirectly to other animals, soil, groundwater and through vapors. Dr. deFur found that the conceptual model was accurately constructed, but that there were two particular weaknesses in this risk assessment. The first, which he did not think affected the outcome, was not including eggs in the study. The second weakness was that the Navy based the risk on the animals being healthy and living above ground and breathing uncontaminated air, rather than living in burrows. Burrowing animals are under at least modest respiratory stress.

Mr. Mach asked whether there was any change in the policy recommended by the National Research Council in the 1980's that risk assessors and risk managers should be kept apart. Dr. deFur described three publications that recommend coordination of risk assessment and risk management. He also discussed the difference between risk assessment for humans and for ecological systems. In human health risk assessment, the goal is to protect humans at the individual level; with ecological risk assessments, populations are protected with the exception of a species on the endangered species list. A 10% loss is considered acceptable.

Dr. deFur then talked about dense nonaqueous phase liquids (DNAPLs), organic liquids denser than water. They sink. This is the most difficult type of contamination to deal with, since it exists in a plume which migrates based on gravity and groundwater flow and is very difficult to remove.

<u>Conclusions and Recommendations</u>: Dr. deFur referred to his written report. In the case of chemicals for which there are no toxicological data, the Navy should try to find chemicals that are sufficiently related, if possible, to fill in the missing data. He repeated his concern about the exclusion of eggs from the assessment, and the assumption that animals were healthy and lived above ground. The inclusion of children in the study was very good, since most studies don't consider them. However, children breathe at a height of 1 meter, rather than 2 meters, and that was not taken into account. Over all, he felt that the risk assessments were good and could be improved with these

additional consideration and additions.

Feasibility Study - ***Tamara Niles, Project Manager and Chemist, Summit Envirosolutions in Reno, Nevada***

Ms. Niles reviewed the feasibility study. In general, she thought the study was very thorough. Groundwater contamination and soil contamination were dealt with separately, with a list of viable alternatives given for each.

Soil: Ms. Niles "toured" the RAB through the site with the use of overheads, pointing out in particular the lateral distribution of contaminants. The clay layer, which is not continuous, has operated as a fairly good barrier for vertical migration of DNAPLs such as trichloroethene (TCE). The clay is solid and dense and there is very little vertical mobility through this medium. The conductive is 10 to the minus 9 (typical conductivities generally range from 10 to the minus 3 to10 to the minus 6). Ms. Masters inquired about lateral mobility. Ms. Niles replied that the typical pattern is for contaminants to pool out when they hit the clay, thus creating a subsurface lateral distribution. Mr. McCauley asked how thick the clay barrier was. Mr. Collins informed him that it is very thick, more than 20 feet.

Each remedial option was evaluated for six different scenarios. Three scenarios considered only human health, three more examined both human health risk and ecological factor risk. Ms. Hunter asked if 6 options were more than Ms. Niles usually sees, and she replied that indeed it was. The initial screening looked for technically appropriate, practical, implementable options. The secondary screening evaluated effectiveness, implementability and cost. Ms. Hunter asked whether any option was eliminated because of cost, and Ms. Niles said it was not. A feasibility study examines all alternatives

As a result of the primary and secondary screenings, a set of viable alternatives were developed. These were then analyzed individually and comparatively. They started with 45 alternatives and used 9 particular criteria. They came up with 7 final viable remedial alternatives for soil. "No action" is required to be one of the alternatives; even if it is not used, it must be considered. The final alternatives were: (1) No action; (2) Institutional controls (fencing, signs, land use restrictions); (3) Capping plus institutional controls; (4) In situ soil vapor extraction, excavation and off-site disposal, institutional controls; (5) In situ soil vapor extraction, bioventing, stabilization, institutional controls; (6) Excavation, ex situ thermal desorption, off-site disposal and institutional controls; and (7) Excavation, off-site disposal, institutional controls.

One of the options, soil vapor extraction (SVE), is currently being implemented as an interim action to remove VOCs. Ms. Hunter inquired about the size of the site. Mr. Collins said that the whole site was 38 acres, Ms. Niles added that the parking lot is 2 acres, and Mr. Mach told the RAB that 5 or 6 acres of plastic was placed on the site for the VOC removal actions. In response to Ms. Hunter's request for clarification, Mr. Mach explained that what is going on right now is an interim ac tion, rather than the final action. SVE is considered by some EPA guidelines to be an innovative technology. Mr. Mach said that 40 to 50 wells were originally installed and all but 3 have been turned off as they have effectively remediated those areas. There appears to be a source near the top of the water table near the remaining thee wells, and additional air injection is taking place in order to help speed up the clean up of those last 3 wells. After that, the Navy will do verification sampling, and then if necessary do rebound studies at regular intervals.

Ms. Hunter expressed concern about like gasses in the soil, and Ms. Niles explained that SVE, by creating a diffusion gradient, would eliminate anything adsorbed into the soil. Mr. Mach added that the VOCs can be in three different phases: gaseous phase, dissolved into water molecules, or adsorbed into the soil. Ms. Niles said that at some point a cost benefit analysis is called for to

determine how long to operate the system. The exposure pathway of Site 9 will be eliminated through soil vapor extraction, excavation and off-site disposal.

Groundwater: Rather than 45 treatment options, 130 initial treatment options were evaluated. The modeling scenarios appear to have been done appropriately. The feasibility study did a very good job of distilling the alternatives until the reasonable options were apparent.

The ULINE groundwater model is typically used for estuary dilution factors, for discharging contaminants into bodies of water. There are two ULINE scenarios: (1) integrating tidal influences under conservative scenarios, which has a dilution factor of 2930-3800; and (2) heat and solid transport in 3D [HST3D], with a dilution factor of 62 million. Ms. Hunter inquired how a substance being emptied into the bay can be measured. Ms. Niles explained the sampling of bay sediments as well as point sources and porewater testing.

If you accept the models and the premise of dilution factors, then theoretically there is no potential adverse impact to receptors in the bay. If the concentrations are so low as to be unmeasurable, then there are no effects to human health or the environment. If they can be measured, then a risk assessment is called for. Dr. deFur mentioned earlier that there is no completed pathway from groundwater to ecological receptors. The options for groundwater are as follows: (1) No action; (2) Institutional controls; (3) Hydraulic containment; (4) Mass removal with UV oxidation; (5) Mass removal with powder activated carbon PACT, re-injection; (6) Air sparging with SVE; and (7) In situ dehalogenation (90' depth).

Ms. Niles described a funnel and gate system where borings would be put in to a depth of 80-90 feet. The water would be funneled through gates, and a filter system where a combination of zero valence iron and sand causes a chemical process which dehalogenates the compounds into a less toxic or nontoxic state. She also mentioned the deviation possible when drilling underground, typically a deviation by 7 feet per hundred which could place gaps in the wall. The expected life of such a wall is approximately 30 years or so. Ms. Niles said that this technology is great, if it is feasible.

Conclusions and Recommendations: Ms. Niles explained that if the results of the models are accepted as correct, then there is no risk to human health or the environment. Therefore, if any action is done at the site, the action itself will create more harm and pollution than doing nothing. The pollution created by trucks on site, power generated for operating equipment, extraction of chemicals with emission to the air, water, or land would be worse than leaving the site alone. Ms. Hunter asked Ms. Niles to rank the technologies if one were to be implemented. Ms. Niles said that since an SVE system is already operational at the site, she would opt for an air sparging system. This does not address the DNAPLs, which are at a depth of 80 feet. The other suggestion she would have is an innovative technique involving surgical application of high concentrations of hydrogen peroxide. This was not one of the 130 options studied. Any cleanup involving removal of water is very labor intensive, cost intensive and time intensive. A "pump and treat" system involves exposing people to the treatment technology.

Ms. Hunter asked about hydraulic containment, and Ms. Niles described it as a low-flow pump and treat system. You create a hydraulic gradient, recover it in several wells and treat it above ground. Ms. Hunter then asked about a slurry wall, which Ms. Niles explained would be ineffective, since it would only redirect water over time, creating an alternate flow path. The major problem would be around the slurry wall, rather than under. Mr. McCauley added that a slurry wall degrades over time. Mr. Mach reminded the RAB that the same 7' per 100' deviation would apply here as well.

PUBLIC COMMENTS AND QUESTIONS

Ms. Marron announced that Jim Kozakowski, of Bechtel, had a stroke two weeks ago and passed

away. He had worked extensively on Sites 5 and 9. His passing is a loss to the RAB, and he will be missed.

Mr. Collins said that new fact sheets for NAS North Island and NAB Coronado will be out soon. He also mentioned that there are two copies of the Draft Action Memorandum for the low level radiation cleanup at Sites 2 and 9 out for review. Ms. Masters inquired about the feasibility study for Site 9. Mr. Collins said comments were due June 18th.

Ms. Mingay announced that there would be a public hearing May 14th at Village Hall, Village Elementary School at 7:00 p.m. on the mixed waste storage facility. This is a draft hazardous waste permit and a proposed mitigated negative declaration.

Agenda Items: NAS North Island and NAB Coronado "paper tour"; draft report from pilot TAPP; new membership applications

<u>Upcoming RAB meetings:</u> Thursday, June 18th; No meeting in July; Thursday, August 20th; Thursday, September 24th

The meeting adjourned at 8:35 p.m.